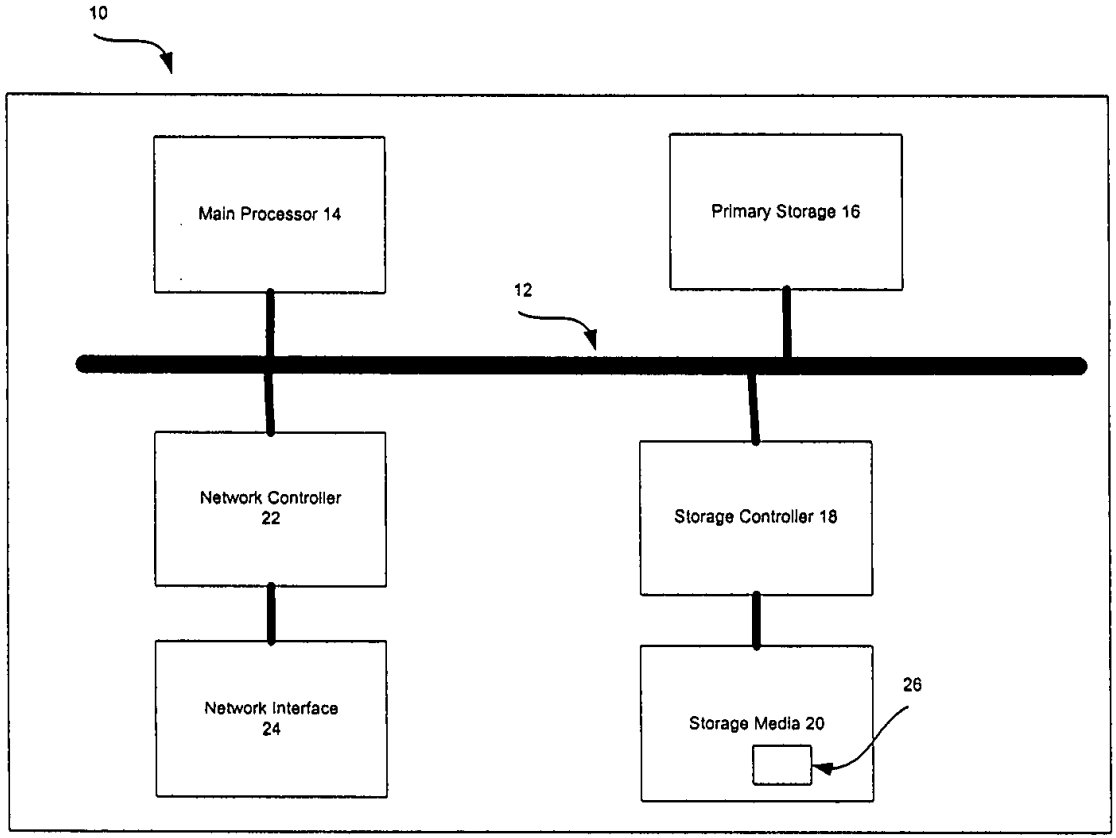

10
Main Processor 14
Primary Storage 16
12
Network Controller
22
Storage Controller 18
Network Interface
24
Storage Media 20
26

FIGURE 1

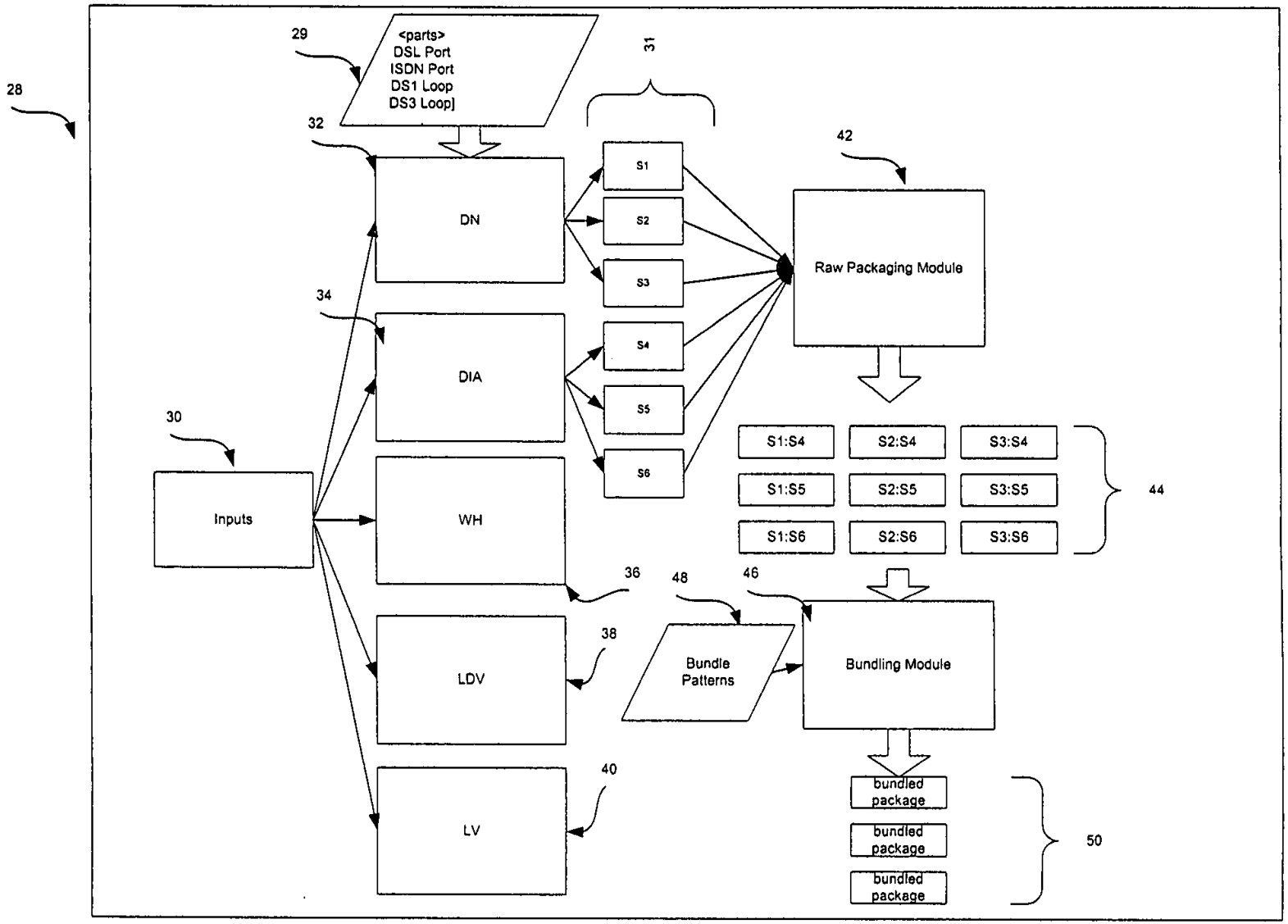

28
29
<parts>
DSL Port
ISDN Port
DS1 Loop
DS3 Loop]
31
32
DN
S1
S2
S3
42
Raw Packaging Module
34
DIA
S4
S5
S6
30
Inputs
WH
S1:S4
S2:S4
S3:S4
S1:S5
S2:S5
S3:S5
S1:S6
S2:S6
S3:S6
44
36
48
46
LDV
38
Bundle
Patterns
Bundling Module
LV
40
bundled
package
bundled
package
bundled
package
50

FIGURE 2

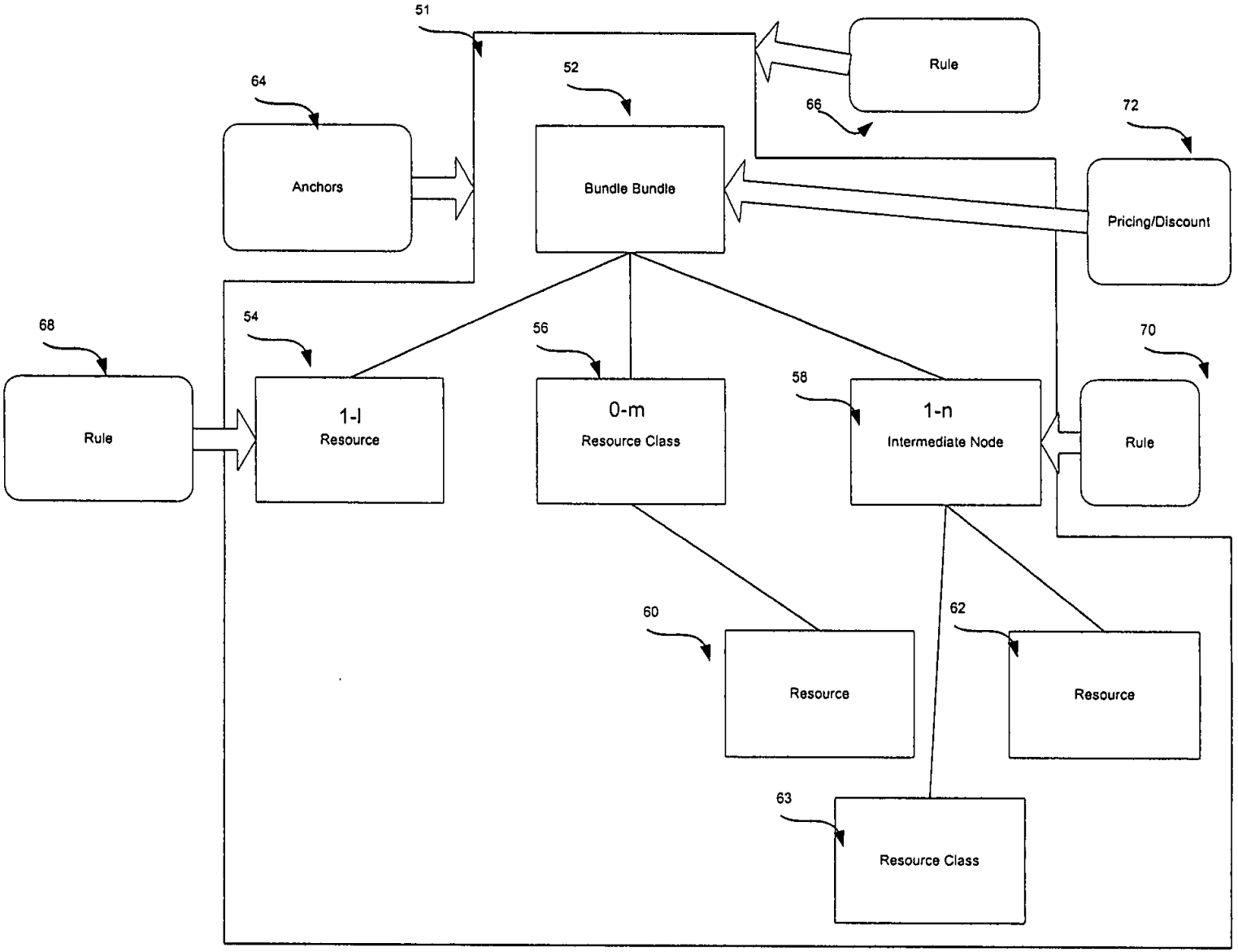

51
Rule
64
52
66
72
Anchors
Bundle Bundle
Pricing/Discount
68
54
56
70
Rule
1-l
Resource
0-m
Resource Class
58
1-n
Intermediate Node
Rule
60
62
Resource
Resource
63
Resource Class

FIGURE 3A

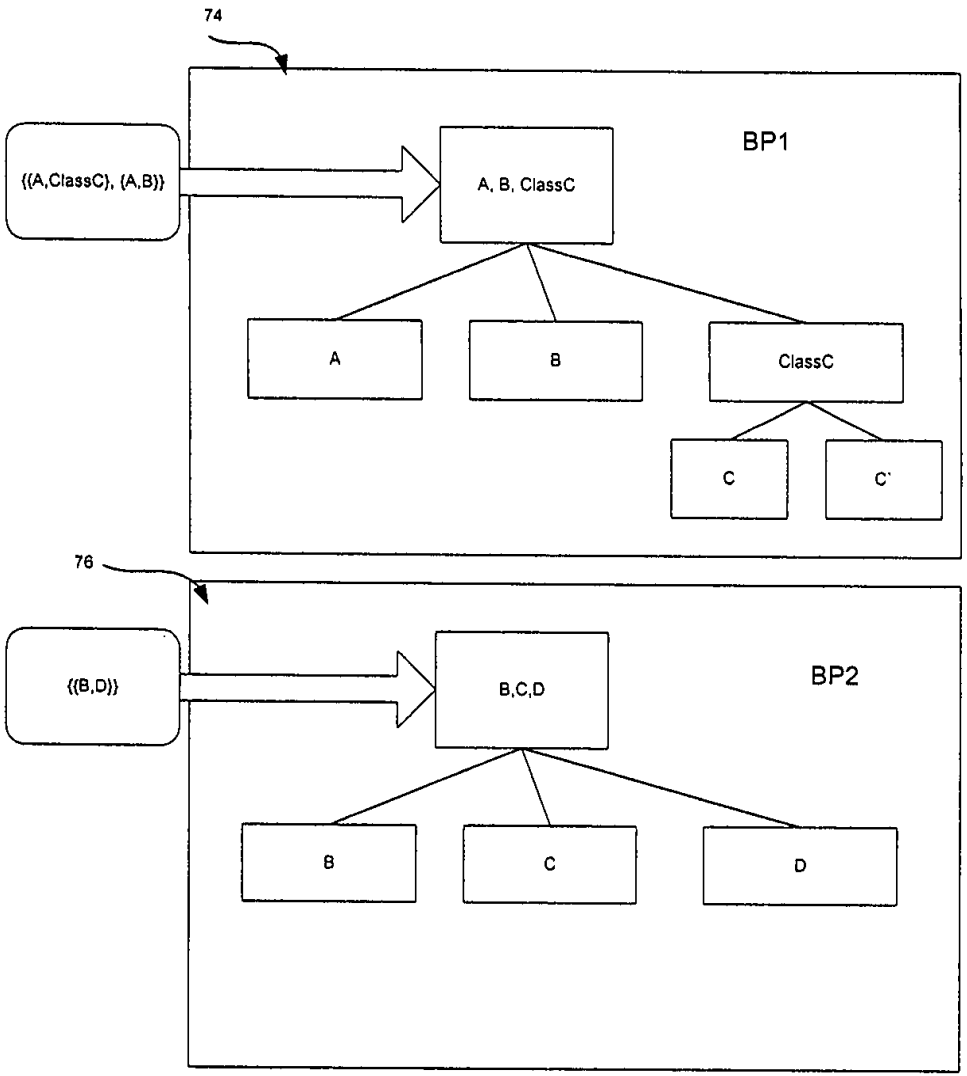



FIGURE 3B

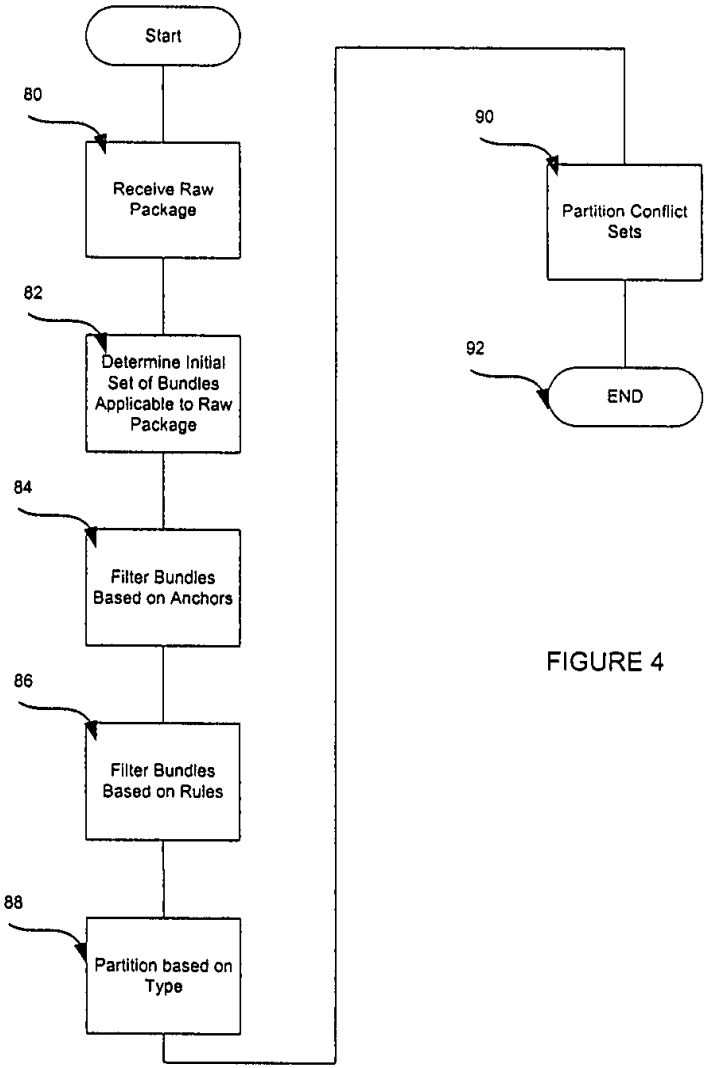

Start
80
Receive Raw Package
82
Determine Initial Set of Bundles Applicable to Raw Package
84
Filter Bundles Based on Anchors
86
Filter Bundles Based on Rules
88
Partition based on Type
90
Partition Conflict Sets
92
END

FIGURE 4

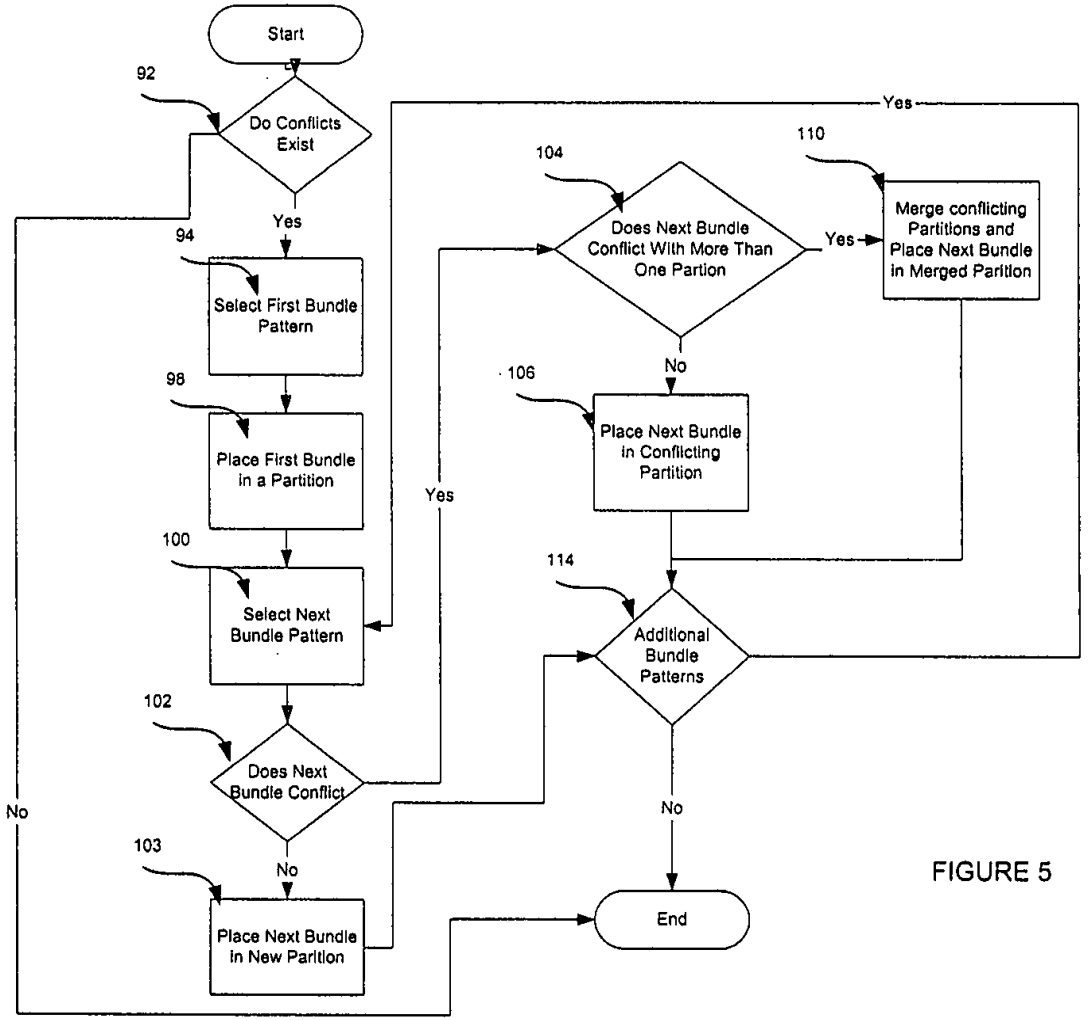
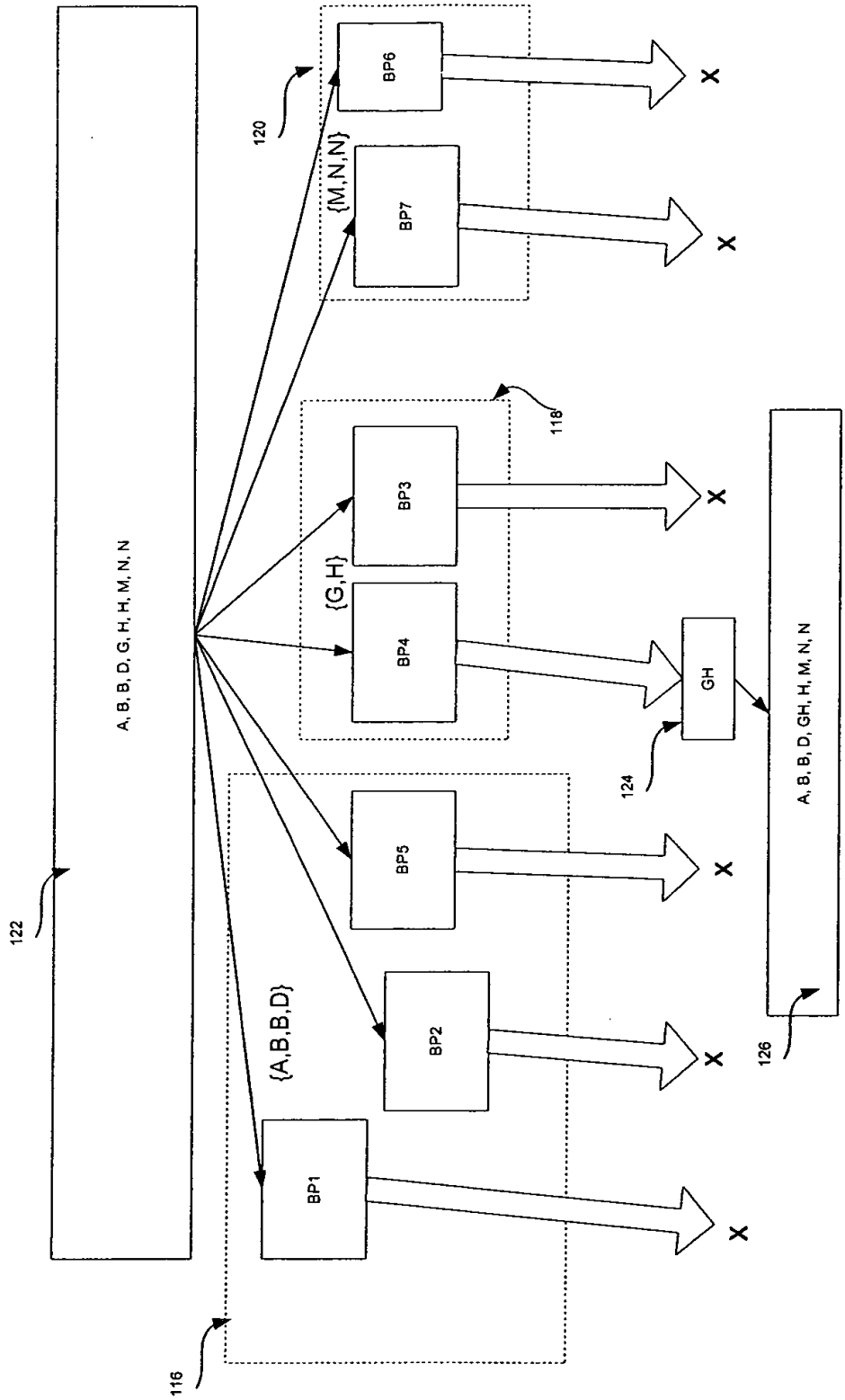

Start
92
Do Conflicts Exist
Yes
94
Select First Bundle Pattern
98
Place First Bundle in a Partition
100
Select Next Bundle Pattern
102
Does Next Bundle Conflict
No
103
Place Next Bundle in New Partion
No
Yes
104
Does Next Bundle Conflict With More Than One Partion
Yes
110
Merge conflicting Partitions and Place Next Bundle in Merged Partion
No
106
Place Next Bundle in Conflicting Partition
114
Additional Bundle Patterns
Yes
No
End

FIGURE 5

FIG. 6


A, B, B, D, G, H, H, M, N, N
122
116
{A,B,B,D}
BP1
BP2
BP5
118
{G,H}
BP3
BP4
GH
124
120
{M,N,N}
BP6
BP7
X
126
A, B, B, D, GH, H, M, N, N

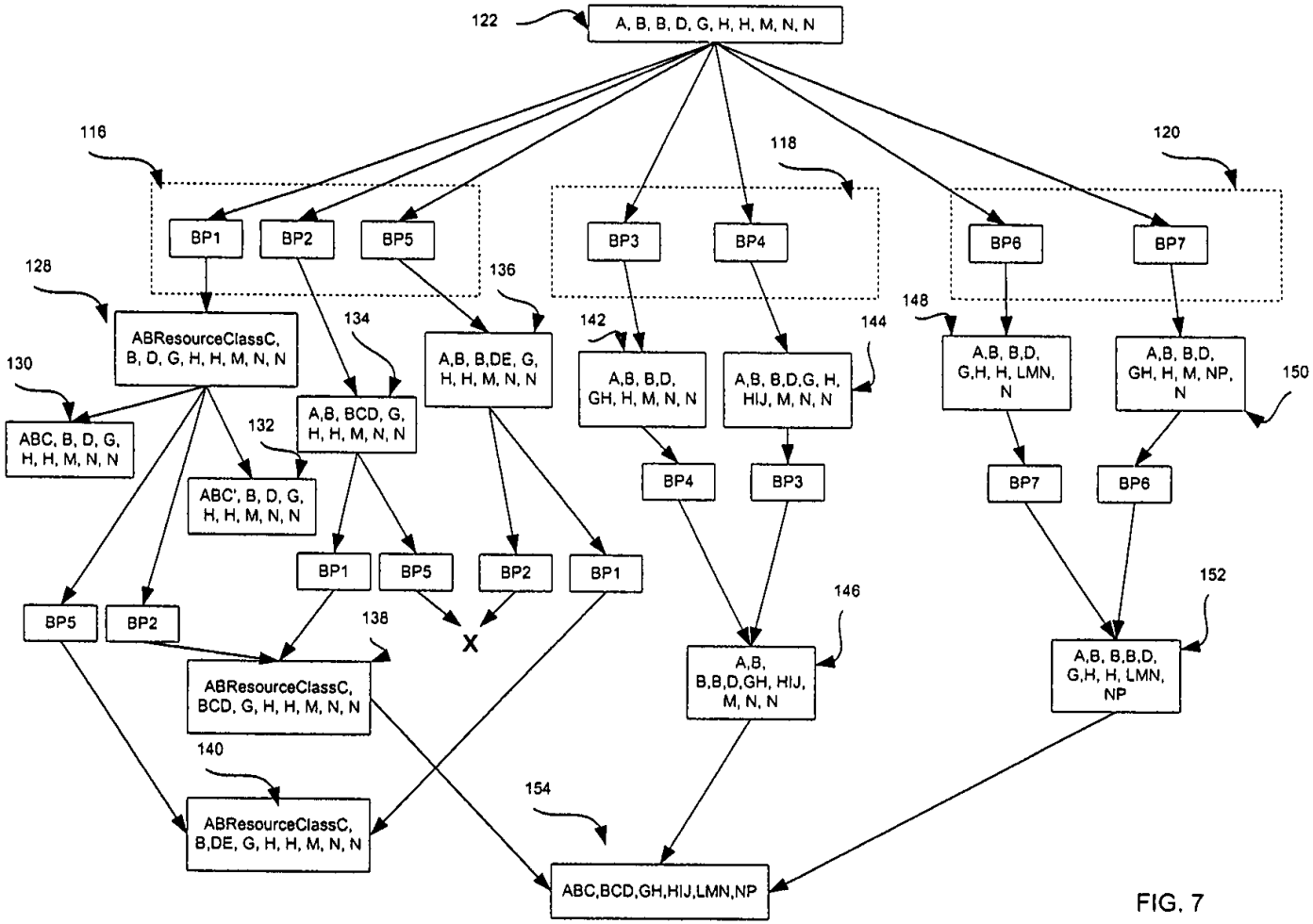

122
A, B, B, D, G, H, H, M, N, N
116
118
120
BP1
BP2
BP5
BP3
BP4
BP6
BP7
128
136
148
ABResourceClassC, B, D, G, H, H, M, N, N
134
142
144
A,B, B,DE, G, H, H, M, N, N
A,B, B,D, GH, H, M, N, N
A,B, B,D,G, H, HIJ, M, N, N
A,B, B,D, G,H, H, LMN, N
A,B, B,D, GH, H, M, NP, N
150
130
ABC, B, D, G, H, H, M, N, N
132
A,B, BCD, G, H, H, M, N, N
ABC', B, D, G, H, H, M, N, N
BP4
BP3
BP7
BP6
BP1
BP5
BP2
BP1
BP5
BP2
138
X
146
152
A,B, B,B,D,GH, HIJ, M, N, N
A,B, B,B,D, G,H, H, LMN, NP
ABResourceClassC, BCD, G, H, H, M, N, N
140
154
ABResourceClassC, B,DE, G, H, H, M, N, N
ABC,BCD,GH,HIJ,LMN,NP

FIG. 7

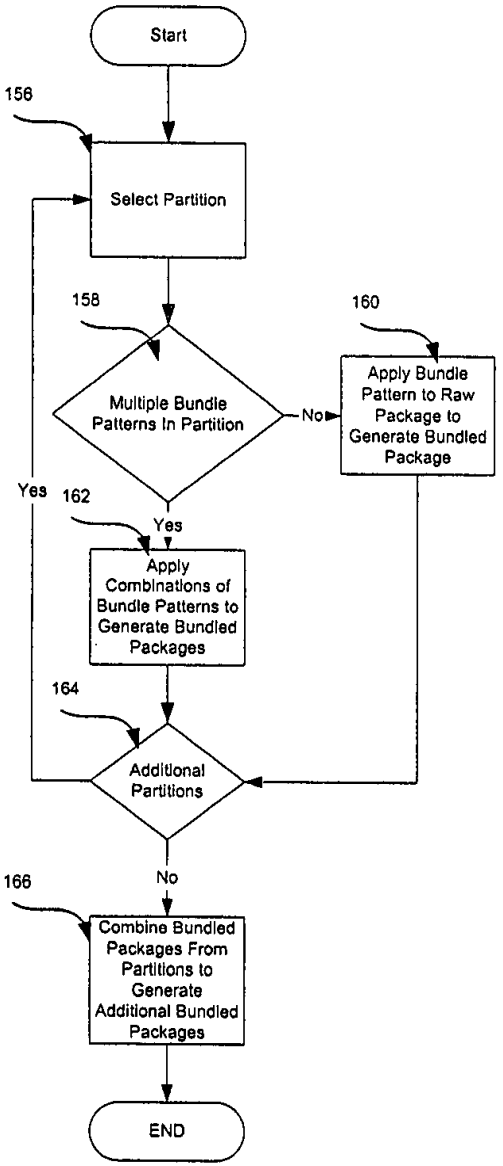

Start
156
Select Partition
158
Multiple Bundle Patterns In Partition
No
160
Apply Bundle Pattern to Raw Package to Generate Bundled Package
Yes
162
Yes
Apply Combinations of Bundle Patterns to Generate Bundled Packages
164
Additional Partitions
Yes
No
166
Combine Bundled Packages From Partitions to Generate Additional Bundled Packages
END

FIGURE 8

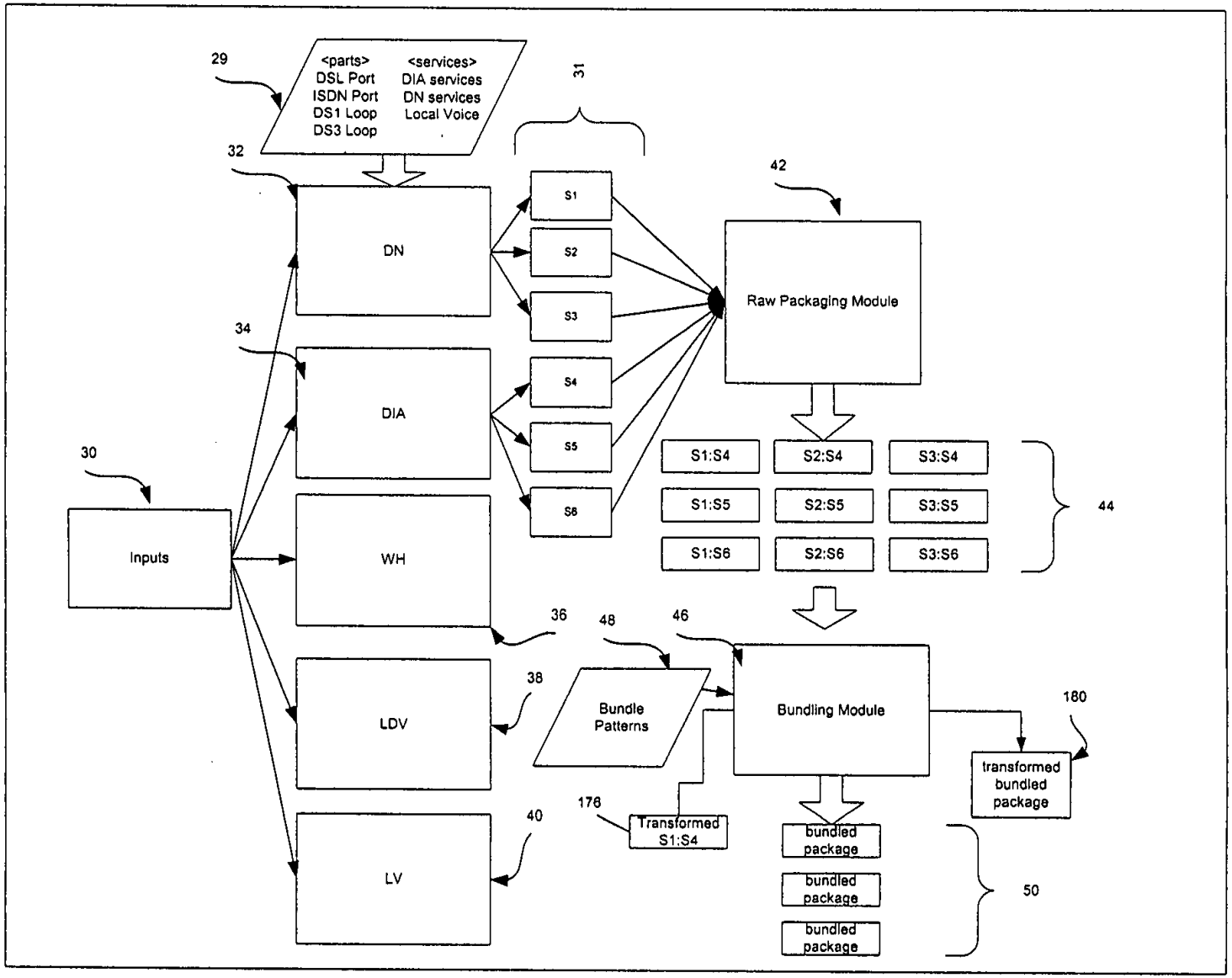

29
<parts>
DSL Port
ISDN Port
DS1 Loop
DS3 Loop
<services>
DIA services
DN services
Local Voice
31
32
DN
34
DIA
30
Inputs
WH
36
LDV
38
LV
40
S1
S2
S3
S4
S5
S6
42
Raw Packaging Module
S1:S4
S2:S4
S3:S4
S1:S5
S2:S5
S3:S5
S1:S6
S2:S6
S3:S6
44
48
46
Bundle Patterns
Bundling Module
180
transformed bundled package
176
Transformed S1:S4
bundled package
bundled package
bundled package
50

FIGURE 9

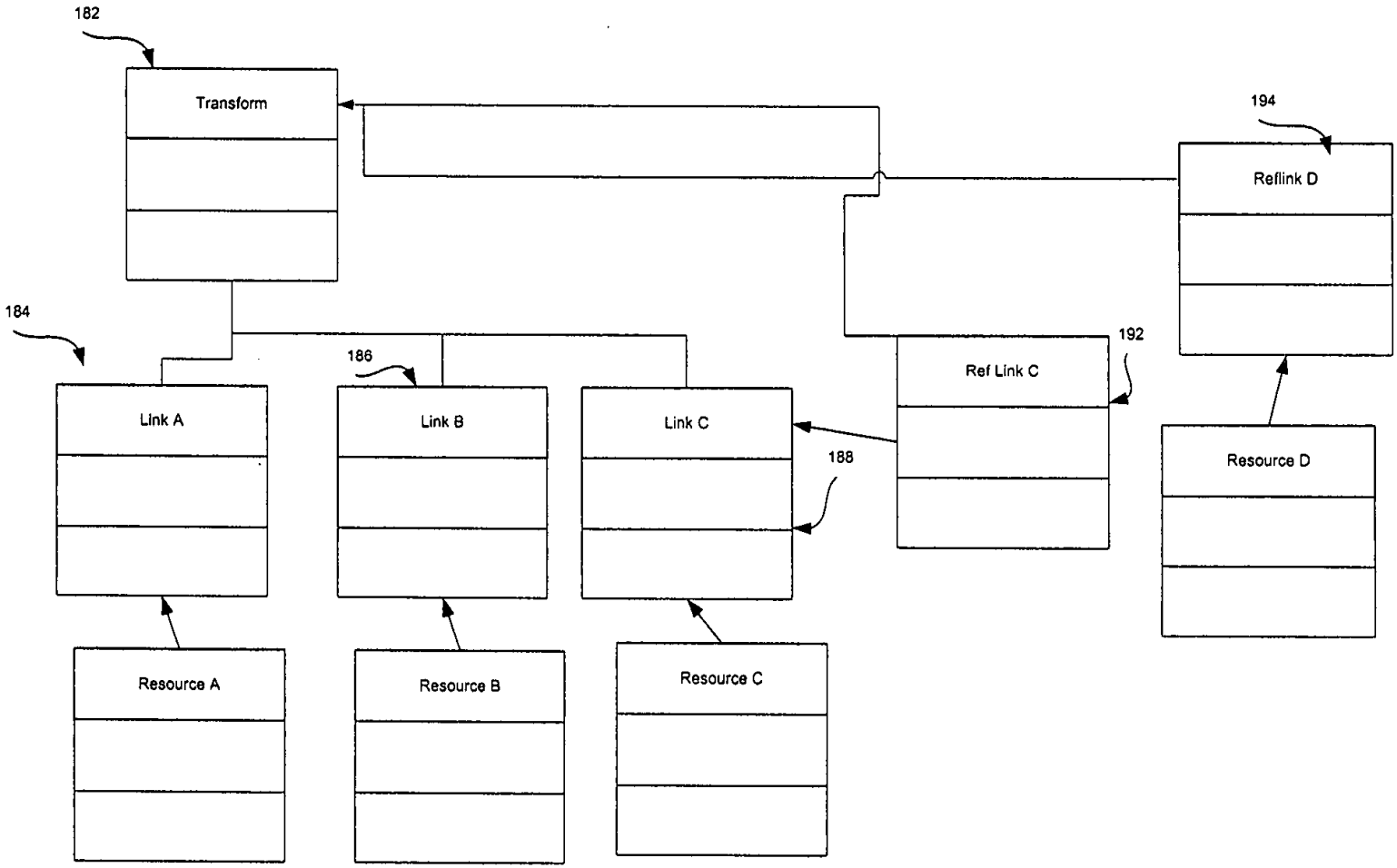

182
Transform
194
Reflink D
184
186
192
Ref Link C
Link A
Link B
Link C
188
Resource D
Resource A
Resource B
Resource C

FIGURE 10

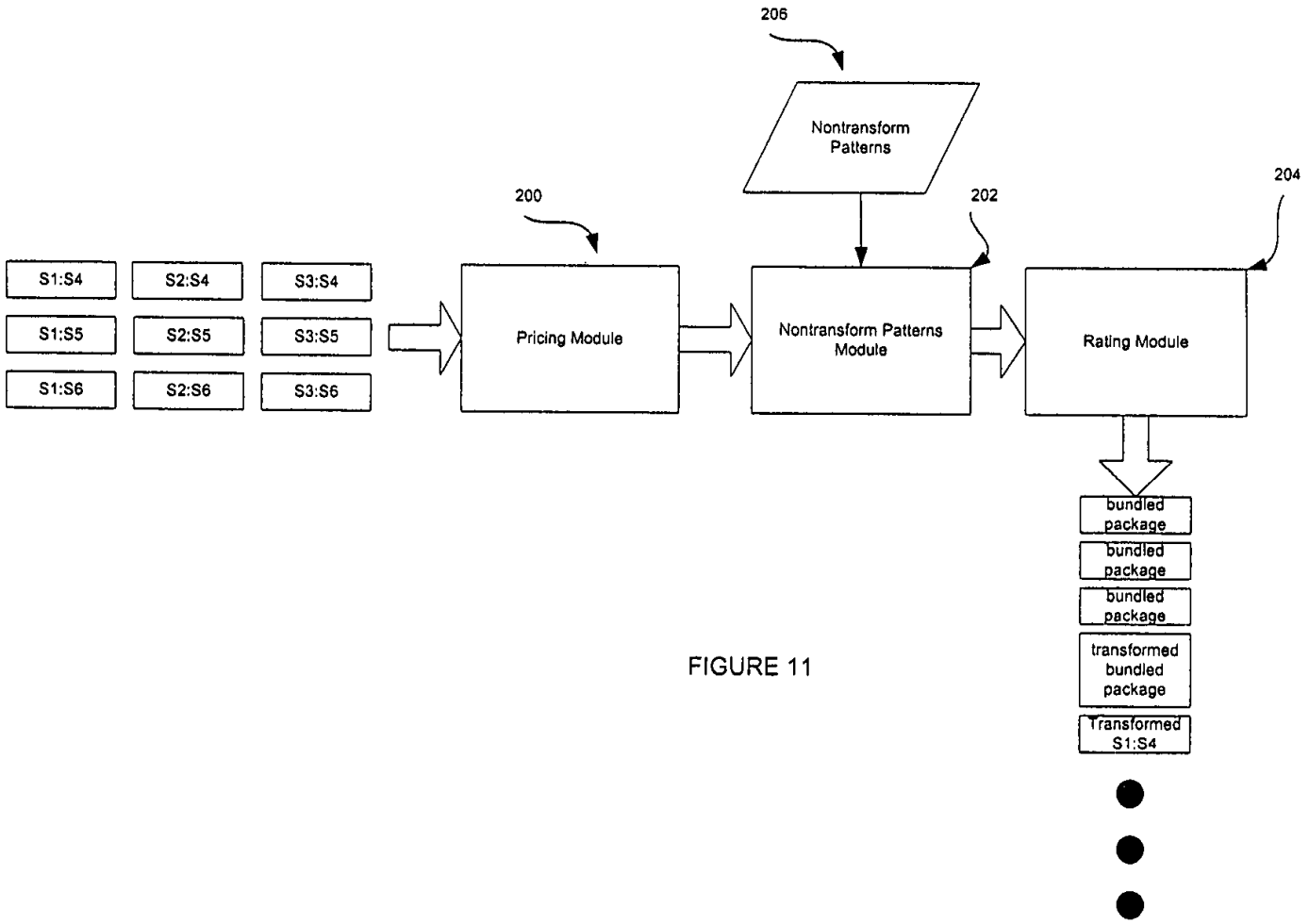

206
Nontransform Patterns
200
202
204
S1:S4
S2:S4
S3:S4
S1:S5
S2:S5
S3:S5
S1:S6
S2:S6
S3:S6
Pricing Module
Nontransform Patterns Module
Rating Module
bundled package
bundled package
bundled package
transformed bundled package
Transformed S1:S4

FIGURE 11

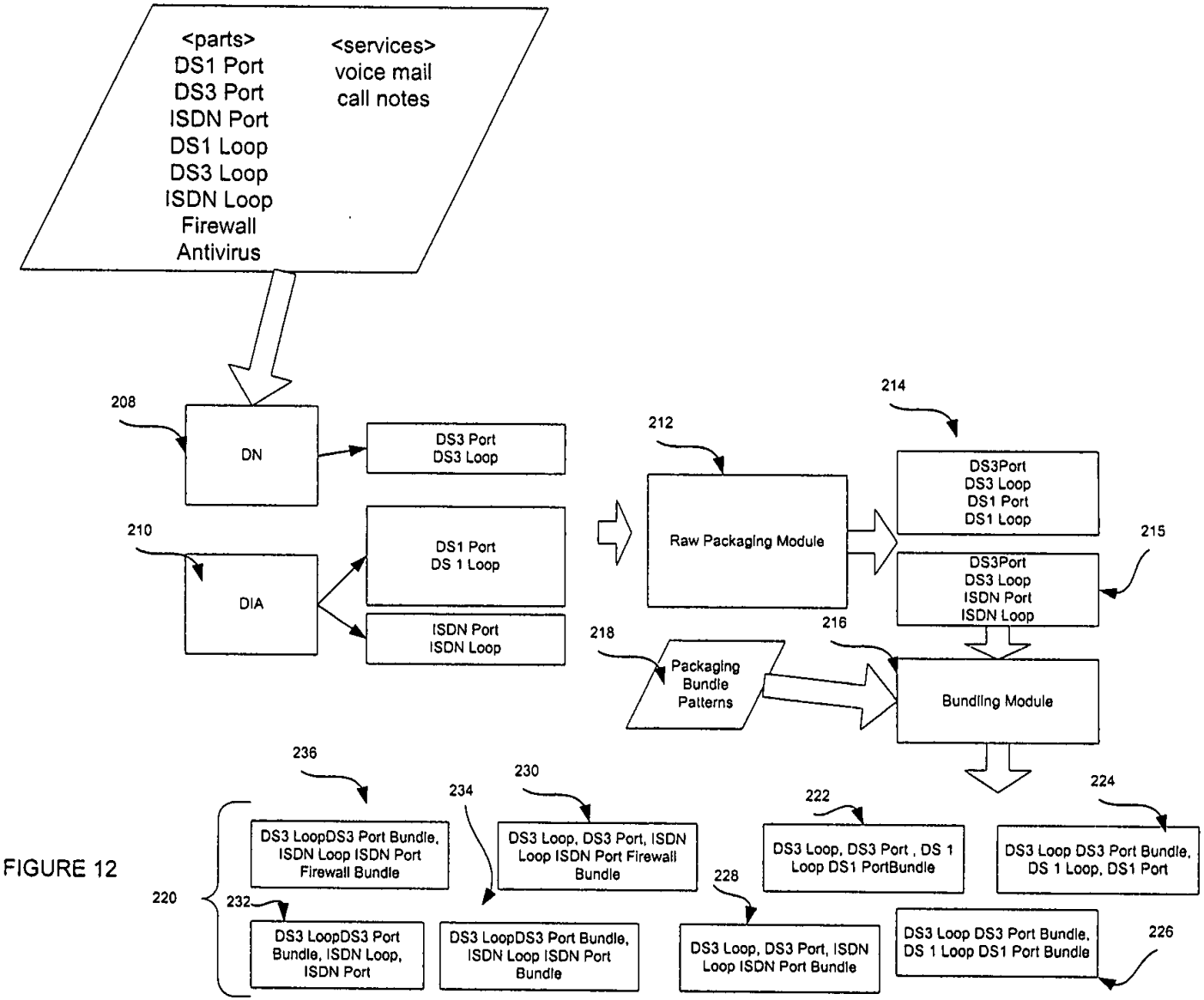

<parts>
DS1 Port
DS3 Port
ISDN Port
DS1 Loop
DS3 Loop
ISDN Loop
Firewall
Antivirus
<services>
voice mail
call notes
208
DN
DS3 Port
DS3 Loop
210
DIA
DS1 Port
DS 1 Loop
ISDN Port
ISDN Loop
212
Raw Packaging Module
214
DS3Port
DS3 Loop
DS1 Port
DS1 Loop
215
DS3Port
DS3 Loop
ISDN Port
ISDN Loop
216
218
Packaging
Bundle
Patterns
Bundling Module
236
DS3 LoopDS3 Port Bundle, ISDN Loop ISDN Port Firewall Bundle
234
230
DS3 Loop, DS3 Port, ISDN Loop ISDN Port Firewall Bundle
222
DS3 Loop, DS3 Port , DS 1 Loop DS1 PortBundle
224
DS3 Loop DS3 Port Bundle, DS 1 Loop, DS1 Port
220
232
DS3 LoopDS3 Port Bundle, ISDN Loop, ISDN Port
DS3 LoopDS3 Port Bundle, ISDN Loop ISDN Port Bundle
228
DS3 Loop, DS3 Port, ISDN Loop ISDN Port Bundle
DS3 Loop DS3 Port Bundle, DS 1 Loop DS1 Port Bundle
226

FIGURE 12

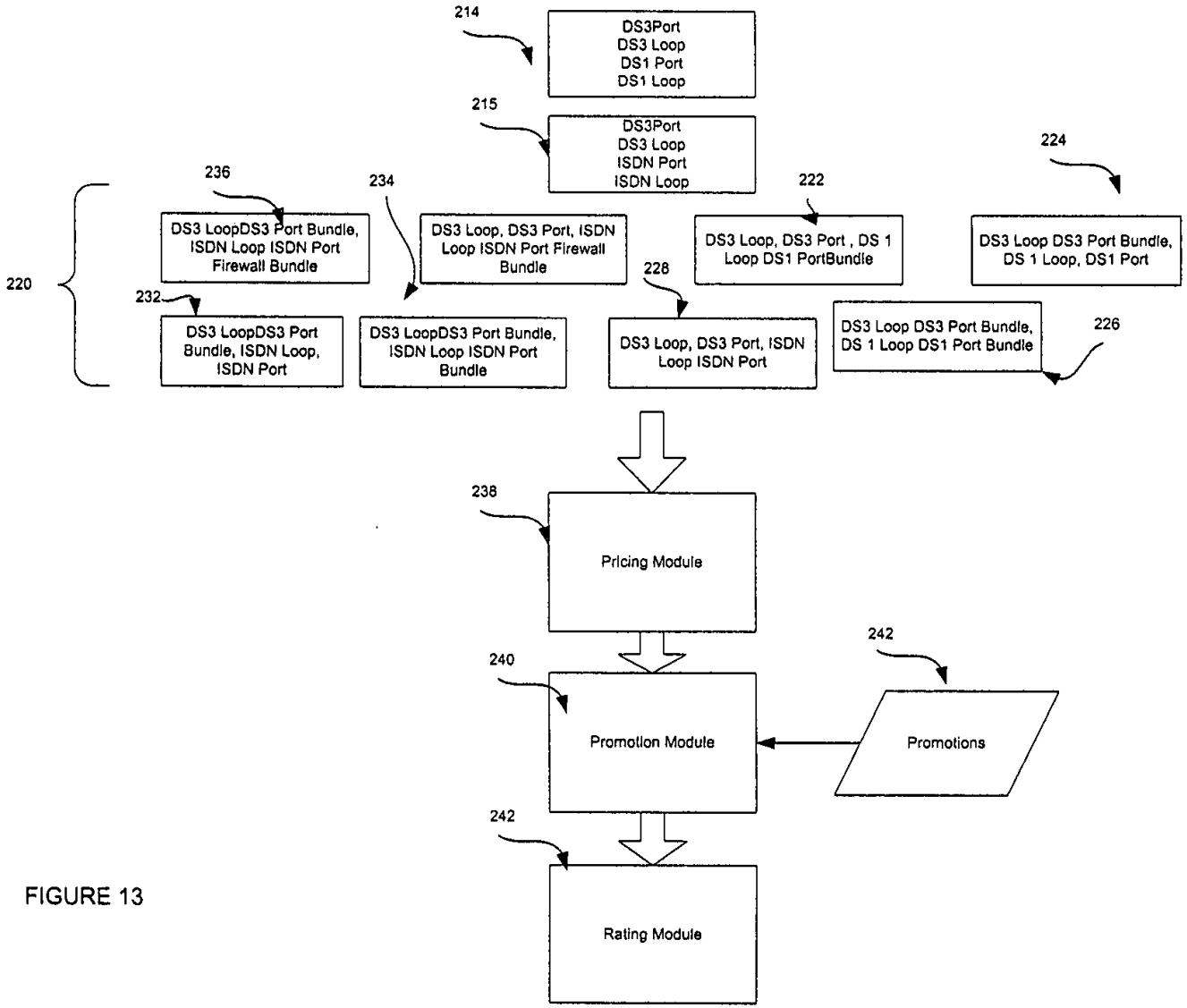

214
DS3Port
DS3 Loop
DS1 Port
DS1 Loop
215
DS3Port
DS3 Loop
ISDN Port
ISDN Loop
224
236
234
222
DS3 LoopDS3 Port Bundle, ISDN Loop ISDN Port Firewall Bundle
DS3 Loop, DS3 Port, ISDN Loop ISDN Port Firewall Bundle
DS3 Loop, DS3 Port , DS 1 Loop DS1 PortBundle
DS3 Loop DS3 Port Bundle, DS 1 Loop, DS1 Port
220
228
232
DS3 LoopDS3 Port Bundle, ISDN Loop, ISDN Port
DS3 LoopDS3 Port Bundle, ISDN Loop ISDN Port Bundle
DS3 Loop, DS3 Port, ISDN Loop ISDN Port
DS3 Loop DS3 Port Bundle, DS 1 Loop DS1 Port Bundle
226
238
Pricing Module
242
240
Promotion Module
Promotions
242
Rating Module

FIGURE 13

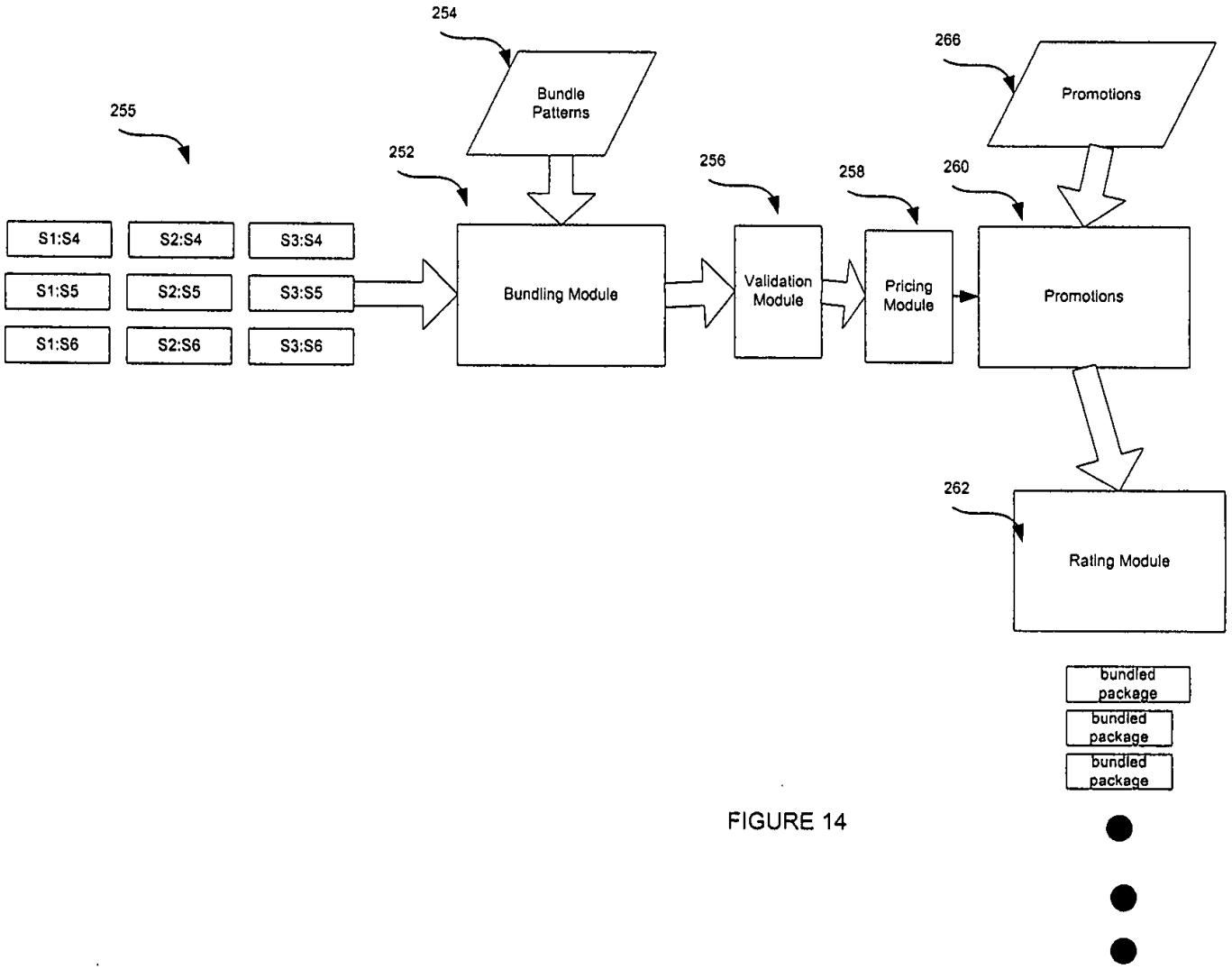

254
Bundle Patterns
266
Promotions
255
252
256
258
260
S1:S4
S2:S4
S3:S4
S1:S5
S2:S5
S3:S5
S1:S6
S2:S6
S3:S6
Bundling Module
Validation Module
Pricing Module
Promotions
262
Rating Module
bundled package
bundled package
bundled package

FIGURE 14